In the Claims

1. (original) A communications network (1) comprising a head end (11) coupled by respective communications paths to a plurality of outstations (12), wherein the head end (11) has means for marshalling upstream communications from the plurality of outstations (12) via the transmission of downstream commands, the downstream commands comprising a global command allowing none of the outstations (12) to transmit to the head end (11) for a pre-set period, the global command being followed within the pre-set period by a further command to a selected outstation of the plurality of outstations (12) overriding said global command allowing the selected outstation to transmit upstream to the head end (11), wherein at least one of the respective communications paths comprises an optical communication path portion (14,17) and an electrical path portion (15,128,130,132).

2. (original) A communications network as claimed in claim 1, wherein the further command to the selected outstation to commence transmission upstream comprises a pause command to the selected outstation to pause transmission upstream for a zero time period.

3. (original) A communications network as claimed in claim 1, wherein the head end is coupled to the at least one of the plurality of outstations (12) via a star coupler (16).

4. (original) A communications network as claimed in claim 1, wherein the head end (11) is coupled to at least one of the plurality of outstations (12) via an optical-to-electrical conversion unit (13,120).

5. (original) A communications network as claimed in claim 4, wherein the optical-to-electrical conversation unit comprises a photo-diode and an amplifier.

6. (original) A communications network as claimed in claim 3, wherein different optical wavelengths are used respectively for upstream and downstream transmission along the optical communication path.

7. (original) A communications network as claimed in claim 6, wherein downstream transmissions from the head end (11) are carried on a plurality of optical wavelengths.

8. (original) A communications access network (1) comprising, a head end (11), and a plurality of outstations (12) coupled to the head end (11) via a propagation medium, wherein the head end (11) is arranged to transmit downstream to the plurality of outstations (12) a sequence of frames (400,500) comprising data frames (400) and command frames (500), wherein the command frames (500) comprise first and second command frames and provide marshalling control of upstream transmission from the plurality of outstations (12), wherein the first command frame incorporates a global command to all of the plurality of outstations (12) to pause upstream transmission for a pre-set time period, and wherein the second command frame is transmitted within the pre-set time period and incorporates a further pause command having an associated zero time period, the further pause command addressed to a selected outstation overriding the global command and allowing the selected outstation to transmit to the head end (11), wherein the propagation medium comprises an optical medium portion (14,17) and an electrical medium portion (15,128,130,132).

9. (original) A communications network as claimed in claim 8, wherein the head end (11) is coupled to at least one of the plurality of outstations (12) by a star coupler (16).

10. (original) A communications network as claimed in claim 9, wherein said star coupler (16) is a non-return coupler.

11. (original) A communications network as claimed in claim 8, wherein the head end (11) is coupled to at least one of the plurality of outstations (12) by a splitter.

12. (original) A communications network (1) comprising a head end (11) coupled by respective communications paths to a plurality of outstations (12), wherein the head end (11) is arranged to transmit downstream to the plurality of outstations information frames (400) containing data traffic and command frames (500) for marshalling upstream transmissions from the plurality of outstations (12), wherein alternate command frames contain respectively, a global command to all of the plurality of outstations (12) to pause upstream transmission for a pre-set time period, and a further command addressed to a selected outstation overriding the global command and allowing the selected outstation to transmit upstream to the head end (11).

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13. (original) A method of marshalling upstream communications from a plurality of outstations (12) to a head end (11) in a communications network (1), the head end (11) being coupled to the plurality of outstations (12) by respective communications paths and at least one of the respective communications paths comprises an optical communications path portion (14,17) and an electrical path portion (15,128,130,132), the method comprising:

sending (300,304,308) from the head end to the plurality of outstations (12) a global command allowing none of the plurality of outstations (12) to transmit to the head end for a pre-set period, and

within the pre-set time period, sending (302,306) a further command to a selected outstation overriding the global command allowing the selected outstation to transmit to the head end (11).

14. (original) A method as claimed in claim 13, wherein the further command comprises a pause command to the selected outstation and having a zero time period associated therewith.

15. (original) A method of marshalling upstream communications to a head end (11) from a plurality of outstations (12) in a communications network (1), the head end (11) being coupled to the plurality of outstations (12) by respective communications paths and at least one of the respective communications paths comprises an optical communications path portion (14,17) and an electrical path portion, (15,128,130,132), the method comprising transmitting downstream, from the head end (11) to the plurality of outstations (12) data frames (400) and command frames (500), wherein alternate command frames contain respectively, a global command to all of the plurality of outstations (12) to pause upstream transmission for a pre-set time period, and a further command transmitted within the pre-set time period to a selected outstation overriding the global command allowing the selected outstation to transmit to the head end (11).

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16. (original) A method as claimed in claim 15, wherein the global command to all of the plurality of outstations (12) to pause transmission is accompanied by a broadcast address.

17. (original) A method as claimed in claim 16, wherein each of the outstations (12) has a respective address, and wherein the further command to the selected outstation to commence transmission is accompanied by the address of the selected outstation.

18. (original) A method as claimed in claim 17, wherein the further command to the selected outstation to commence transmission upstream comprises a pause command to the selected outstation to pause upstream transmission for a zero time period.

19. (original) A method as claimed in claim 15, wherein different optical wavelengths are employed for respective downstream and upstream transmission along the optical communication path.

20. (original) Computer executable software code stored on a computer readable medium, the code being for marshalling upstream communications from a plurality of outstations (12) to a head end (11) in a communications network (1), the head end (11) being coupled to the plurality of outstations (12) by respective communications paths and at least one of the respective communications paths comprising an optical communications path portion (14,17) and an electrical communications path portion (15,128,130,132), the code comprising:

code to send (300,304,308) from the head end to the plurality of outstations (12) a global command allowing none of the plurality of outstations (12) to transmit to the head end for a pre-set period, and

code to send (302,306), within the pre-set time period, a further command to a selected outstation overriding the global command allowing the selected outstation to transmit to the head end (11).

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21. (currently amended) A programmed computer for marshalling upstream communications from a plurality of outstations (12) to a head end (11) in a communications network (1), the head end (11) being coupled to the plurality of outstations (12) by respective communications paths and at least one of the respective communications paths comprising an optical communications path portion (14,17) and an electrical communications path portion (15,128,130,132), the computer code comprising:

a memory having at least one region for storing computer executable program code, and

a processor for executing the program code stored in the memory, wherein the program code comprises:

code to send (300,304,308) from the head end to the plurality of outstations (12) a global command allowing none of the plurality of outstations (12) to transmit to the head end for a pre-set period, and

code to send (302,306), within the pre-set time period, a further command to a selected outstation overriding the global command allowing the selected outstation to transmit to the head end (11).

22. (original) A computer readable medium having computer executable code stored thereon, the code being for marshalling upstream communications from a plurality of outstations (12) to a head end (11) in a communications network (1), the head end (11) being coupled to the plurality of outstations (12) by respective communications paths and at least one of the respective communications paths comprising an optical communications path portion (14,17) and an electrical communications path portion (15,128,130,132), the code comprising:

code to send (300,304,308) from the head end to the plurality of outstations (12) a global command allowing none of the plurality of outstations (12) to transmit to the head end for a pre-set period, and

code to send (302,306), within the pre-set time period, a further command to a selected outstation overriding the global command allowing the selected outstation to transmit to the head end (11).

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